REMARKS

By this amendment, the specification, drawings and claims 1, 4, 5, 9-11, 15-16, 18-23, 26, and 29-33 are amended, claim 17 is hereby canceled, and new claim 35 is hereby presented. Claims 1, 4-7, 9-11, 13-16, 19-26 and 29-35 are pending in the application. Further examination of the application, as amended, and favorable reconsideration of the objections and rejections are respectfully requested.

The drawings were objected to as allegedly failing to show the actuator and filter, as recited in claims 13 and 14, for example. Fig. 6 has been amended to schematically show the actuator. With respect to the filter, the claim referred to does not affirmatively recite the filter, and recites only the filter coupling, which is shown in the drawings as item 33 in Fig. 1; however, applicant nevertheless has amended Fig. 1 to show the cone filter as suggested by the examiner. Fig. 1 has been similarly amended to show the nozzle that may be attached to the nozzle coupling, referred to in claim 23, for example.

The specification has been amended for consistency with the drawings, and also to correct "Witch's Broom" to -- witches hat --. Further, the specification has been amended to clarify that the water flow may have a profile such as a water wall for heat suppression near a flare, as mentioned in the paragraph bridging pages 1 and 2. No new matter is presented.

Claim 1 has been amended to clarify that the fluid deflector and nozzle body have substantially parallel surfaces determining the direction of flow of the fluid as it leaves the nozzle, wherein the fluid flow deflector and the nozzle body together define a width of an opening from the channel at or near the downstream end, and wherein a position of the fluid deflector is adjustable relative to the nozzle body to vary the width of the channel opening to thereby provide a self-cleaning mechanism. Claim 1 has also been amended for consistency in the term "nozzle body" and for proper antecedents.

Claims 9 - 11 are amended for consistency with claim 1 from which they depend.

Claim 29 has been similarly amended to clarify the fluid flow deflector and the nozzle body together define a width of an opening from the first channel at or near said downstream end, said first channel opening width being variable by adjusting a position of the fluid deflector relative to the nozzle body, wherein the fluid deflector determines the direction of flow of fluid as it leaves the nozzle body, and wherein the fluid leaving the nozzle body forms a water wall for heat suppression near the flare. Claim 29 is also amended to specify the "first channel" so as to clearly distinguish from the "central channel" in claim 16, for example.

Claim 16 is amended to recite the feature of claim 17, which has been canceled. Claims 18 - 23 and 26 are further amended to clarify that applicant is *not* presenting means-plus-function claims under 35 USC 112, sixth

paragraph. Claim 23 is further amended to clarify that the further nozzle coupling is for a secondary nozzle to distinguish from the nozzle of claim 16/29. Claims 4 - 5, 15, 18 - 23 and 31 - 33 are also amended for consistency with claim 29 from which they depend. Claim 32 is further amended to properly reflect antecedents.

Claim 26 is amended to delete reference to claim 29 and instead recite affirmatively the features from claim 29. No new matter is presented by the foregoing amendments.

Rejection under 112, second paragraph - variable channel width - claims 1, 4-7, 9-11, 13-26, 29-34

Claims 1, 4-7, 9-11, 13-26, 29-34 were rejected as indefinite with respect to the variable channel width. By the foregoing amendment, applicant has clarified that it is width of the opening from the channel, as defined by the nozzle body and the fluid flow deflector, that can be varied or adjusted. It is believed the rejection is moot and can be withdrawn.

Rejection under 112, second paragraph - central channel- claims 16-17, 22-23

Claims 16-17 and 22-23 were rejected as indefinite with respect to the channel referred to in claim 29 and the central channel referred to in claims 16, 17, 22 and 23. Although not believed to be necessary, applicant has amended claim 29 to specify the first channel which is referred to in claim 29, as distinguished from the central channel in claims 16, 17, 22 and 23. Claim 17,

which was also alleged to lack sufficient antecedent basis for the central beam, has been canceled. It is thus believed the rejection is moot and can be withdrawn.

Rejections under 102/103 - US 1628823 (Chester) alone- claims 1, 4-7, 9-11, 14-15, 24-26, 29-33; claim 25

Claims 1, 4-7, 9-11, 14-15, 24-26 and 29-33 were rejected as anticipated by US 1628823 (Chester), and claim 25 as obvious in view of Chester alone. Chester discloses a self flushing atomizing nozzle wherein a deflector head 3 is spring biased toward the closed position and opened by the pressure of a fluid supplied thereto, wherein a temporary increase in fluid pressure will open the orifice 9 and free solid matter to pass therethrough. Page 1, lines 68-110. The Chester nozzle has an orifice 9 defined by an anticlastic surface (page 1, lines 57-60) of deflector head 3, and a sharp, right angle edge on the nozzle body 8 (Fig. 1), which is apparently designed to generate turbulence and atomize the liquid into fine drops: the Chester nozzle is an atomizing nozzle. See the title and page 1, lines 5-25 and lines 33 (atomizer), 34 (atomizing), etc.

In contrast the nozzle of applicant's claim 1, for example, is provided with substantially parallel surfaces determining the direction of flow of the fluid as it leaves the nozzle. This creates a more laminar, less turbulent, smooth fluid flow. See the specification at page 11, lines 10-14. It is considered that Chester does not teach the invention as claimed.

Independent Claims 26 and 29 specify that the fluid flows from the body inlet along the channel to the body outlet and impinges on the fluid deflector with minimal energy loss prior to impingement on the fluid deflector, and forms a water wall. See the specification at page 13, lines 5 to 21.

Claims 25 and 35 also recite frustoconical parallel surfaces, as well as the water wall. The Office action acknowledges that Chester fails to disclose the frustoconical deflecting surface, and gratuitously asserts that a frustoconical surface would have been obvious, providing no teaching, suggestion, motivation or other basis for the assertion. Chester fails to disclose or suggest such feature, and indeed teaches squarely away from the frustoconicality of the deflector by teaching anticlasticity.

When faced with the problem of trying to achieve a water wall around a hydrocarbon well test flare, the skilled man would simply not look to an atomization nozzle such as that of Chester for the solution or guidance. For background, the reason the present invention was conceived was the great structural strength of hydrocarbon well test flares. Previously, such flares were tangentially surrounded by a fine spray. The flare had little structural strength and would move in the breeze; however, the spray, which was also structurally weak, would also move with the flare in any breeze, so everything was fine. As flares became structurally stronger, however, the spray shield was inadequate. As the wind blew, the spray would move with the wind but the flare resisted it. This exposed the rig to heat which the spray shield was intended to prevent.

The presently claimed nozzle provides a water wall which holds its position around the flare in windy conditions. See the specification at page 1, line 8 through page 2, line 33.

Chester fails to disclose or suggest a nozzle with features suitable for forming a water wall. The rejections base solely on Chester are improper and their withdrawal is respectfully requested.

Rejection under 103 - US 1628823 (Chester) in view of US 2004/0028476 (Payne) - claims 13, 18-20 and 34

Claims 13, 18-20 and 34 were rejected as obvious over Chester in view of Payne. Payne is cited solely for the flow rate sensor and control, and fails to overcome the deficiencies of Chester as applied to the main claims. The combination of Chester and Payne thus fails to obtain the claimed invention. Withdrawal of the rejection is respectfully requested.

Conclusion

Accordingly, it is respectfully submitted the application is in condition for allowance. Reconsideration of the application, as amended, and withdrawal of the objections and rejections are respectfully requested.

Applicant has submitted a supplemental Information Disclosure Statement and requests that the examiner consider and acknowledge the references cited therein.

If any issues remain that are appropriate for resolution by telephone interview, please contact undersigned counsel.

The Office is authorized to charge deposit account 501285 for any fees due in connection with this communication, or to refund any overpayment.

Respectfully submitted,

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